Claims

We claim:

1. An insulation bushing assembly for use with an exhaust gas sensor, the insulation bushing assembly comprising:

an insulation bushing including a passageway defining a surface; and

a contact plate assembly having

a contact plate coupled with the insulation bushing; and

a resilient member extending from the contact plate for insertion into the passageway, the resilient member engageable with the surface of the passageway during insertion such that the member is deflected by the surface from an undeflected position with respect to the contact plate to a deflected position with respect to the contact plate.

2. The assembly of claim 1, wherein the surface is a first surface, and wherein the passageway further defines a second surface adjacent the first surface, the resilient member engageable with the second surface upon continued insertion to maintain the member in the deflected position to retain the contact plate assembly in engagement with the bushing.

3. The assembly of claim 2, wherein the first and second surfaces define an oblique angle therebetween.

4. The assembly of claim 2, wherein the first surface and the second surface define an angle therebetween of about 10 to about 12.5.

5. The assembly of claim 1, further comprising a contact wire extending from the contact plate for insertion into the passageway, wherein the resilient member comprises a compression tab separate from the contact wire.

6. The assembly of claim 1, wherein the resilient member comprises a contact wire.

7. The assembly of claim 6, wherein the contact wire defines an apex engageable with the surface of the passageway.

8. The assembly of claim 6, wherein the surface is a first surface, and wherein the contact wire is engageable with at least one additional surface of the passageway spaced from the first surface.

9. The assembly of claim 1, wherein the resilient member comprises at least one of a contact wire and a compression tab.

10. The assembly of claim 9, wherein the surface is a first surface, wherein the compression tab is engageable with the first surface of the passageway, and wherein the contact wire is engageable with at least one additional surface of the passageway spaced from the first surface.

11. The assembly of claim 1, wherein the insulation bushing further includes a slot spaced from the passageway, and wherein the contact plate assembly further includes an alignment tab extending from the contact plate and engageable with the slot to orient the contact plate with respect to the insulation bushing.

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12. The assembly of claim 11, wherein the alignment tab is at least partially engaged with the slot before the resilient member is deflected to its deflected position by the surface of the passageway.

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13. An exhaust gas sensor comprising:

a sensor housing;

a sensor element at least partially enclosed within the housing;

an insulation bushing at least partially supported within the housing, the insulation bushing including a passageway defining a surface; and

a contact plate assembly having

a contact plate coupled with the insulation bushing and the sensor element; and

a resilient member extending from the contact plate for insertion into the passageway, the resilient member engageable with the surface of the passageway during insertion such that the member is deflected by the surface from an undeflected position with respect to the contact plate to a deflected position with respect to the contact plate.

14. The assembly of claim 13, wherein the surface is a first surface, and wherein the passageway further defines a second surface adjacent the first surface, the resilient member engageable with the second surface upon continued insertion to maintain the member in the deflected position to retain the contact plate assembly in engagement with the bushing.

15. The assembly of claim 14, wherein the first and second surfaces define an oblique angle therebetween.

16. The assembly of claim 14, wherein the first surface and the second surface define an angle therebetween of about 10 to about 12.5.

17. The assembly of claim 13, further comprising a contact wire extending from the contact plate for insertion into the passageway, wherein the resilient member comprises a compression tab separate from the contact wire.

18. The assembly of claim 13, wherein the resilient member comprises a contact wire.

19. The assembly of claim 18, wherein the contact wire defines an apex engageable with the surface of the passageway.

20. The assembly of claim 18, wherein the surface is a first surface, and wherein the contact wire is engageable with at least one additional surface of the passageway spaced from the first surface.

21. The assembly of claim 13, wherein the resilient member comprises at least one of a contact wire and a compression tab.

22. The assembly of claim 21, wherein the surface is a first surface, wherein the compression tab is engageable with the first surface of the passageway, and wherein the contact wire is engageable with at least one additional surface of the passageway spaced from the first surface.

23. The assembly of claim 13, wherein the insulation bushing further includes a slot spaced from the passageway, and wherein the contact plate assembly further includes an alignment tab extending from the contact plate and engageable with the slot to orient the contact plate with respect to the insulation bushing.

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24. The assembly of claim 23, wherein the alignment tab is at least partially engaged with the slot before the resilient member is deflected to its deflected position by the surface of the passageway.

25. A method of assembling an exhaust gas sensor, the method comprising:

providing an insulation bushing including a passageway defining a surface;

providing a contact plate assembly including a contact plate and a resilient member extending from the contact plate;

inserting the resilient member into the passageway;

engaging the resilient member with the surface; and

deflecting the resilient member from an undeflected position with respect to the contact plate to a deflected position with respect to the contact plate.

26. The method of claim 25, wherein the surface is a first surface, and wherein the method further includes engaging the resilient member with a second surface adjacent the first surface to maintain the resilient member in the deflected position to retain the contact plate assembly in engagement with the bushing.

27. The method of claim 25, wherein the contact plate assembly includes a contact wire and a compression tab extending from the contact plate, and wherein engaging the resilient member with the surface includes engaging the compression tab with the surface.

28. The method of claim 25, wherein the contact plate assembly includes a contact wire extending from the contact plate, and wherein engaging the resilient member with the surface includes engaging the contact wire with the surface.

29. The method of claim 25, wherein the contact plate assembly includes a contact wire and a compression tab extending from the contact plate, wherein the surface is a first surface, wherein engaging the resilient member with the first surface includes engaging the compression tab with the first surface, and wherein the method further includes engaging the contact wire with at least one additional surface of the passageway spaced from the first surface.

30. The method of claim 25, wherein the contact plate assembly includes an alignment tab extending from the contact plate, and wherein the method further includes engaging the alignment tab with a slot in the insulation bushing to orient the contact plate with respect to the insulation bushing.

31. The method of claim 30, further comprising at least partially engaging the alignment tab with the slot before engaging the resilient member with the surface.